

FIG. 2

The diagram illustrates a closed-loop testing apparatus for a fuel cell system. The apparatus is housed within a rectangular enclosure 1. A fuel cell 2 is the central component, with its inlet and outlet manifolds labeled 22.1 and 22.2. A gas supply system 3 is connected to the inlet manifold 22.1. This system includes a gas cylinder 38, a pressure-reducing valve 34, a flowmeter 32, and a control valve 31. The gas then passes through a filter 33.1 and a check valve 33.2 before entering the fuel cell. The outlet manifold 22.2 is connected to a gas exhaust system 4. This system includes a check valve 42.1, a flowmeter 42.2, and a control valve 41. The exhaust gas then passes through a filter 40 and a pressure-reducing valve 43 before being vented to the atmosphere. A control system 5 is connected to the fuel cell 2 and the gas supply/exhaust systems. The control system includes a pressure indicator (PI) 7, a pressure sensor 8, a pressure transducer 9, a pressure controller 10, a pressure sensor 14, a pressure transducer 15, a pressure controller 16, and a pressure sensor 17. The control system also includes a gas supply control valve 29.0, a gas supply flowmeter 29.1, a gas supply pressure sensor 29.2, a gas exhaust control valve 23.1, a gas exhaust flowmeter 23.2, a gas exhaust pressure sensor 24.1, and a gas exhaust pressure sensor 24.2. The control system is connected to a power source 11 and a control unit 28. The entire apparatus is shown in a cross-sectional view, with the fuel cell 2 and the gas supply/exhaust systems 3 and 4 being the main components.

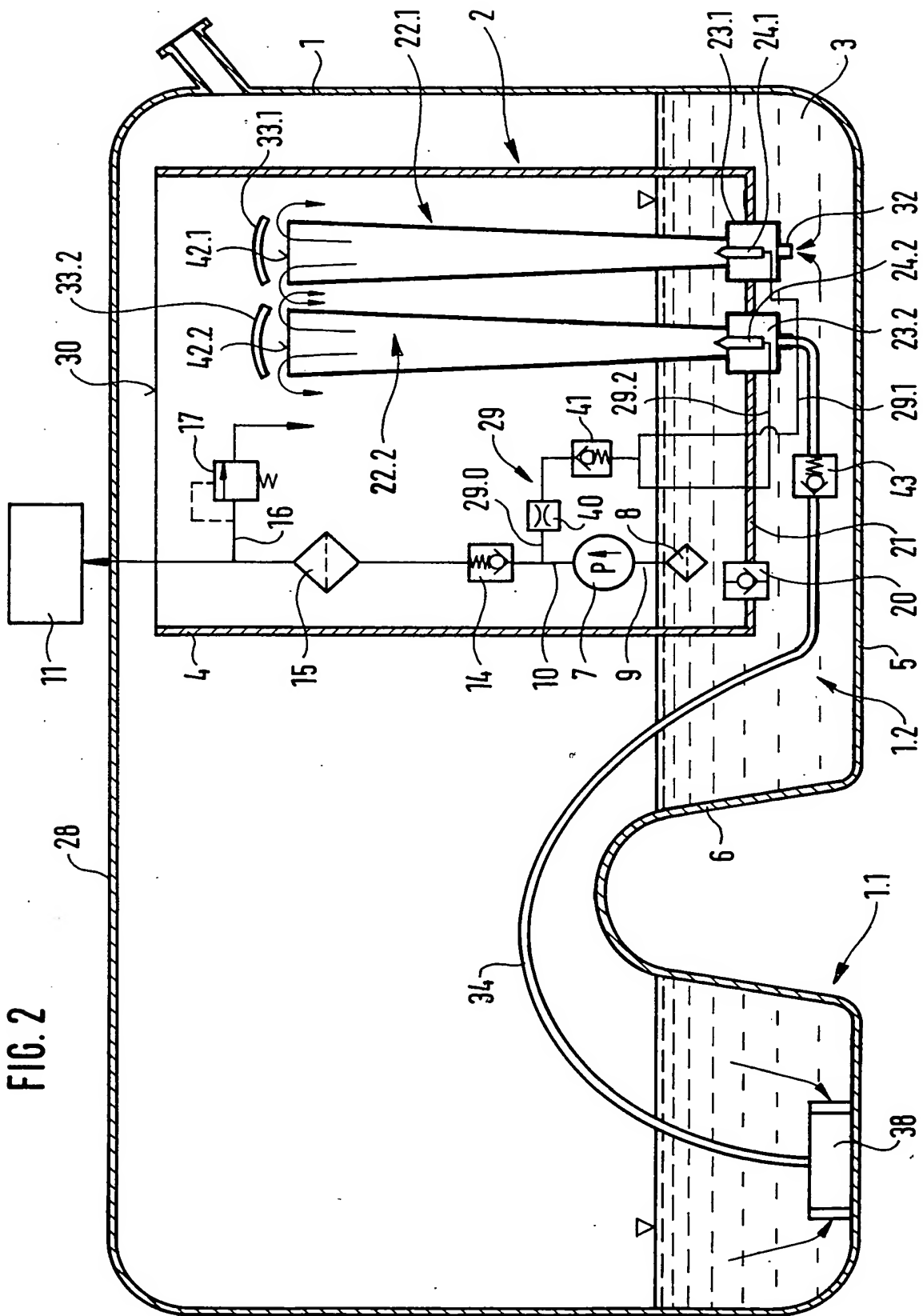


FIG. 3

